

## **MEETING MINUTES (FINAL)**

### **CITY OF TUCSON HABITAT CONSERVATION PLANS (HCPs)**

#### **Technical Advisory Committee (TAC)**

**Wednesday, May 20, 2009, 1:00 – 4:00 p.m.**

**U.S. Fish & Wildlife Service, Tucson Field Office**

**201 North Bonita Avenue, Suite 141**

**Tucson, Arizona 85745**

### **ATTENDEES**

#### **City of Tucson (COT) Habitat Conservation Plans (HCPs) Technical Advisory Committee (TAC) members present:**

Marit Alanen (U.S. Fish & Wildlife Service)

Rich Glinski (Arizona Game and Fish Department – *retired*)

Trevor Hare (Coalition for Sonoran Desert Protection)

Ries Lindley (City of Tucson – Tucson Water Department)

Guy McPherson (University of Arizona – School of Natural Resources)

E. Linwood Smith (EPG, Inc.)

#### **Other Attendees, including *ex-officio* TAC members, present:**

Sherry Barrett (U.S. Fish & Wildlife Service)

Mitch Basefsky (Central Arizona Project)

Jamie Brown (City of Tucson – Office of Conservation and Sustainable Development)

Matt Clark (Defenders of Wildlife)

Locana de Souza (Arizona Game and Fish Department)

Mima Falk (U.S. Fish & Wildlife Service)

David Jacobs (Arizona State Land Department / Arizona Attorney General's Office)

Karolyn Kendrick (Arizona Native Plant Society)

Leslie Liberti (City of Tucson – Office of Conservation and Sustainable Development)

### **1. Welcome, introductions, and ground rules**

This item was tabled until the beginning of discussion item two at which point Jamie reminded the group that, per Technical Advisory Committee (TAC) member request, non- TAC members can add their comments to the discussion during the Call to the Audience.

### **2. Discussion**

#### Greater Southlands HCP: Pima Pineapple Cactus

[Note: The items directly below are notes that were written on the dry erase board during this first discussion. The notes below that represent Leslie's summary of this portion of the meeting, which was closed to the public.]

*On-site “Greater Southlands”*

CLS – future annexation  
Wash ordinance  
NPPO 30% set-aside  
NPPO transplant and mitigate

*Altar Valley*

TDRs – Need ASLD  
ASLD mitigation bank  
Private landowner bank  
NPPO appraisal \$

*Decision Points*

- 1) Flesh-out two alternatives – on-site versus off-site
- 2) ALSLD must be a partner
- 3) On-site alternative will protect both connections  
Off-site alternative – only the southern connection
- 4) There will be trade-offs on-site to get sufficient protection off-site
- 5) Issue: Can there be sufficient preservation on-site versus does off-site result in loss of too much genetic variability across PPC range? (and loss of significant portion of range)
- 6) Critical issues with propagation
  - a) No one has demonstrated propagated plants get to reproductive maturity
  - b) Works in a controlled situation but what about uncontrolled?
  - c) Doesn’t address PPC habitat issues

*To-dos*

- 1) Talk with ASLD
- 2) Potential development through range
- 3) Potential for banks in Altar Valley (Nicole F.)
- 4) Get rest of HDMS points throughout PPC range
- 5) What species would also be protected?
- 6) Where has Pima County acquired lands?

Leslie explained why the first discussion item was closed to the public. She said that TAC members felt that they needed additional information to craft an adequate conservation strategy for the Pima Pineapple Cactus (PPC). City of Tucson (COT) Office of Conservation and Sustainable Development (OCSD) staff members were able to work through the U.S. Fish & Wildlife Service (USFWS) to get the Arizona Game and Fish Department (AGFD) to release Heritage Data Management System (HDMS) exact PPC location coordinates. These PPC location data are restricted in their use and so the COT’s ability to use the data are limited to providing maps in a closed TAC session. She added that COT staff cannot distribute maps to TAC members. The HDMS data and any large format maps cannot be retained after the TAC and COT finish using them for conservation strategy purposes. Leslie apologized that notice was not given any sooner, but that notice was provided as soon as the COT Attorney’s Office had a clear understanding about how to handle the discussion.

Leslie said that COT staff obtained PPC HDMS location points within a 5-mile radius of the HCP planning area, which the group referred to during the discussion. She said that there was discussion about the best approach for conserving PPC and it came down to two options. She said that one option is to use whatever mechanisms are available or that could be developed to preserve PPC habitat within the Greater Southlands HCP Planning Area. The other option would

be to say “Well, we may not be able to do anything significant in the Greater Southlands HCP Planning Area, but we could focus on the Altar Valley.” She said that the reason there is some doubt about being able to do any significant conservation in the Greater Southlands is because the range of the species circles the Sierrita Mountains. And, there is some discussion about whether or not the northern portion of PPC habitat is still intact because of the amount of recent development in this area. Leslie said that the TAC does not know what is occurring on Tohono O’odham Nation lands. PPC may occur there or may not, but the group does not know and can’t bank on the assumption that there are PPC on those lands.

Leslie said that the debate came down to whether habitat preservation should focus on the Greater Southlands or southern Altar Valley. The disadvantage of preserving PPC in the Greater Southlands is that the TAC doesn’t know if it will be an effective strategy in the long run in part because there will be so much development pressure in the area. Whereas, with lands in the Altar Valley, there is less development pressure and there could ultimately be protection of larger blocks of contiguous land. Leslie said that the problem with choosing the Altar Valley option is that it means that there would be less PPC conservation in the Greater Southlands, which could lead to the loss of PPC genetic variability and evolutionary potential. She added that the TAC does not have the necessary data to really know to what extent that would happen. However, it would be a big loss of a portion of the PPC range.

Leslie said that what the TAC decided to do was task OCSD staff with fleshing out the details of these different approaches and look at the mechanisms that could be used to protect PPC in the Greater Southlands. One example would be to see how the COT policy requiring that future annexations comply Pima County’s Conservation Lands System (CLS) would affect PPC conservation. Leslie said that a large portion of the PPC range within the Greater Southlands HCP Planning Area is CLS Biological Core. She said that the COT’s Resource Planning Advisory Committee (RPAC) is working on developing an alternative riparian habitat protection ordinance and there might be opportunities within that to protect upland buffers that constitute PPC habitat. Leslie said that with the COT’s Native Plant Preservation Ordinance (NPPO), there are two options that have some protective value. One is compliance with the 30% set-aside methodology. Often, however, compliance using this methodology is accomplished by protecting riparian areas and not all of this will be PPC habitat. She said that another NPPO compliance option involves transplanting PPC on-site and mitigating by planting additional PPC. Although this option has some on-site preservation value, it is limited and so she said that the TAC took the approach of looking at what options are available in other areas.

Leslie said that if the TAC and COT decided to focus on Altar Valley for PPC conservation, there are tools such as Transfers of Development Rights. She said that working with the Arizona State Land Department (ASLD) on this option would be necessary. The ASLD has had some conversations about mitigation banking and there are also options for private landowners to set-up mitigation banks. The COT’s NPPO could be used in the “opposite direction” by utilizing the appraisal method such that revenue from development in the Greater Southlands would be applied to protecting and managing land in Altar Valley.

In terms of the decision points, Leslie said that COT staff will “flesh out” the two alternatives. After this, the TAC will work to determine what is the greater risk to the PPC and decide which

is the better option. She said that the concern is that if there was some effort using both of these options, nothing in the way of meaningful PPC conservation would occur. Trevor disagreed and said that he didn't know how the TAC could evaluate this concern unless a third alternative is also fleshed out: the *in situ* and *ex situ* combined.

Leslie said that there is recognition that if the focus is on PPC conservation in Altar Valley, there will be trade-offs such that instead of encouraging developers to use the 30% set-aside method, the COT would encourage them to use the appraisal method to generate PPC conservation revenue. There may be other trade-offs such as additional flexibility in watercourse protection requirements in exchange for agreements that get land for PPC conservation in Altar Valley. Leslie said that, through it all, the TAC agreed that ASLD should be a partner.

Leslie said that TAC members also talked about PPC propagation and the consensus is that there are three critical issues with that approach. One issue is that it has not been sufficiently demonstrated that PPC can be propagated and transplanted where the plants eventually reach reproductive maturity. She said that propagation may work in a controlled situation, but it may not work in an uncontrolled situation, such as within a neighborhood park. Finally, PPC propagation does not address PPC habitat conservation.

Leslie said that, in terms of "to-dos", one item is to talk with ASLD about options. Another is to look at the two options discussed above, take a step back and consider the entire range of the species and look at which areas are planned for development throughout the range such as annexations, areas planned for development, and areas already developed. She said that COT staff will look at the potential for conservation banks in Altar Valley and, hopefully, Pima County can assist since it sounds like Pima County staff members have investigated this option. Leslie said that COT staff would try to get the HDMS PPC points for the entire range of the species. Discussion will also consider what other species are planned for conservation in Altar Valley and additional benefits of focusing efforts on Altar Valley. Finally, the TAC and COT staff will look at what lands Pima County has acquired. Leslie said that ultimately, the TAC will need to pick one option for the HCP.

TAC members such as Rich and Linwood concurred with Leslie's summary [Upon review of the draft minutes, Rich suggested inserting the following sentences], making two points: First, they emphasized the importance of gathering information on the genetic diversity of the species, and in particular on the genetic importance / uniqueness of the Southlands population, to make critical management action decisions regarding this population. Secondly, the most probable scenario of a developed landscape is that the habitat components needed for PPC (jackrabbits, insects...all of it that is currently known whether acknowledged now by all or not, and including critical components not yet discovered) will eventually degrade; this is our experience with neighborhoods, where priorities are not on natural resources, and where there are very limited / no opportunities to implement maintenance of / reintroduction of newly discovered ecological parameters..

Greater Southlands HCP: Covered Species, riparian habitat protection, and Lee Moore Wash Basin Management Study

Jamie began by referring to the April 1 TAC meeting in which Bill Zimmerman of Pima County's Regional Flood Control District and John Wise of Stantec provided a Powerpoint presentation on the Lee Moore Wash Basin Management Study (Lee Moore Study). After the meeting, Stantec staff provided Jamie with the GIS shapefiles for the Lee Moore Study modeled 100-year floodplains and flow corridors. Based on the discussion from the April 29 TAC meeting, Jamie drafted follow-up questions about the Lee Moore Study as it may pertain to HCP Species of Concern. The TAC reviewed these draft questions. In terms of the Lee Moore Study Erosion Hazard Setbacks, Trevor asked what the COT's current setbacks are. Jamie said that he didn't know but will look it up and provide that information to the TAC. *[Action Item: OCSD staff members provide information on the COT's Erosion Hazard Setback requirements.]*

With regard to the drafted question about watercourse maintenance, Jamie referred to what Ann Audrey said at the April 29 TAC meeting and how developers often want to deed the watercourse channels to the COT so that maintenance becomes the COT's responsibility. However, Ann had said that the COT has little money available for watercourse maintenance. Marit asked what watercourse maintenance entails. Jamie said that Ann spoke to this and said that different COT Departments and their needs affect how vegetation along a watercourse is or is not trimmed or removed. For example, public safety (e.g., flooding, fire, crime) are major drivers for how crews treat the vegetation within and adjacent to a watercourse. Sometimes, this involves removing nearly all the vegetation. Trevor agreed and said that these questions about ownership, maintenance, and stewardship are some of the most important questions. Jamie said that if, for example, lands within Erosion Hazard Setbacks are identified by the TAC as good places to implement conservation strategies, without a good understanding of ownership and maintenance, the lands could become degraded over time. *[Action Item: OCSD staff members see if the COT has any ownership and maintenance guidelines for lands within Erosion Hazard Setbacks]*. Trevor said that it would be interesting to hear about any concerns or questions Julia Fonseca may have about the Lee Moore Study since she has a long history of considering hydrology and geomorphology for riparian habitat. Trevor said he wasn't sure if this would be appropriate, but he wondered if, in addition to Bill and John, if Julia could review the questions.

Jamie said that the second piece of the discussion item was in regards to the questions that Ann Audrey posed of the TAC to help inform the RPAC's work considering a revised watercourse protection ordinance. Jamie said that Ries had suggested the formation of a TAC subcommittee to draft answers to the questions for the entire TAC to review. For review, Jamie read Ann's questions. Trevor said that these questions address both wildlife in general and the HCP Covered Species as well as the living wash system, which includes tobosa swales. These swales have not been identified as providing any important habitat for our Covered Species, but it is an important part of the landscape. Trevor said that Pima County addressed this topic by identifying special elements, which included tobosa swales, unincised washes, limestone outcroppings, and others. He said that the TAC should keep this in mind at all times.

Jamie asked if the other TAC members agreed that the questions should be addressed in a sub-committee, and, if so, who wanted to be on the sub-committee. Ries said that he would volunteer for the sub-committee and would help with writing drafts and coordinating e-mail exchanges. Trevor said that he recommends handling the questions via e-mail since everyone is very busy. It was recommended that COT staff draft answers to these questions and then TAC members will

help edit, revise, and refine. Ries said that he would help coordinate the e-mail exchange with TAC members. *[Action Item: COT staff members draft answers to the RPAC's questions and distribute to the TAC for review and edits].*

Marit referred to an idea mentioned at a recent RPAC meeting where sub-committees would work to draft separate ordinances. She asked if there is the possibility for the TAC to coordinate with these sub-committees. Jamie said that he would talk with Ann Audrey about this. Karolyn said that there was talk about forming sub-committees at the next RPAC meeting. Matt said that there was mention of a possible joint TAC/RPAC meeting.

#### Avra Valley HCP: Monitoring and Changed/Unforeseen Circumstances

Jamie said that he created worksheet that includes a list of possible circumstances – either “Changed” or “Unforeseen/Extraordinary” – that could potential affect the Avra Valley HCP. Jamie said that he wanted to get TAC feedback on whether or not the list is comprehensive and how to consider these circumstances. Given time limitations, Jamie said that he would postpone discussion or request feedback from the TAC via e-mail. Trevor said that since Mitch Basefsky was present, if circumstances such as percentage shortage of flow in the CAP canal or in the reservoirs should be considered. Mitch said that CAP staff would be willing to talk with the TAC about what is happening at Lake Mead and Lake Powell as well as what is happening to augment the Colorado River. He said that there is a lot of different activities going on. He added that, off the top of his head, the only way that he could see this affecting the Avra Valley HCP is if something happened to the Colorado River water supply and Tucson Water had to start recovering all of the mined water. However, he said that the water is much too deep to impact surface vegetation. Jamie said that this may affect the footprint of activities on these lands.

Jamie brought up the subject of the monitoring program for the Avra Valley HCP and said that the concept of forming a TAC sub-committee was mentioned at previous TAC meetings. Jamie said that monitoring and management were described in the preliminary draft HCP but that more effort is needed to refine these so that the costs and funding can be developed. He reviewed some points from a recent TAC meeting in which monitoring for Cactus Ferruginous Pygmy-owl (CFPO) and the Western Yellow-billed Cuckoo (WYBC) was discussed. This included reviewing the biological goals and objectives for the CFPO and WYBC and the TAC's assertion that species-specific monitoring would not be as useful as habitat and threats-based monitoring for these species. He also reviewed a list of what he thinks are next steps for developing the monitoring program, which included refining the list of indicator variables for the other Covered Species, considering the measurement details such as sampling design, duration and frequency, and developing the benchmarks that would trigger management action.

Trevor wondered about baseline information. He said that the TAC has the protected area envelopes but what that look like in terms of vegetation structure, patch size, and connectivity needs to be more fully described, if possible. This will help determine what the thresholds are. Marit asked if the models that were put together serve as a baseline. Jamie said that they do, although vegetation structure was just recently mentioned by the TAC as being an important variable to measure and no baseline information, to his knowledge, exists on that yet. Jamie wondered then if, for vegetation structure, this baseline could be collected in the first several years of Incidental Take Permit issuance. The TAC would have already established acceptable

limits of change (e.g., 20% variability is okay, but a decrease in structure more than that would require management intervention). Trevor said he was unsure how this would be done.

Trevor said that he wonders about the City's fiduciary responsibilities regarding monitoring. Jamie said that the emphasis right now is the establishment of an effective and efficient monitoring program that uses resources, to the extent possible, that are already dedicated to those lands. Ries added that Tucson Water activities may or may not happen on the land and the investment in management and monitoring will need to be commensurate with the investment in any Tucson Water projects for those lands.

Trevor said that at the big picture level, perhaps photopoint monitoring could be done in which COT employees are trained to take these photos and permanent plots are established. As larger projects go in, vegetation structure and other variables can be measured. Jamie referred to the Avra Valley Baseline Study, which involved extensive photo point monitoring. Rich said that photo monitoring is pretty subjective and suggested consideration of the MacArthur Board Technique, which measures diversity of vertical vegetation structure and doesn't take a lot of training to take the measurements. He said that it is not that labor intensive and provides good quantitative information on vegetation species and structure. Trevor said that he thinks that is what the TAC is talking about.

Rich also mentioned threats and said that we don't know how this compares with what Dennis and others at AGFD are using to measure vegetation for CFPO. It would be helpful to find out what protocols AGFD uses to assess CFPO habitat. *[Action Item: OCSD staff members ask AGFD what methods are currently used to assess CFPO habitat.]*

Rich said that the other thing the TAC discussed is the monitoring of fire fuels, which could destroy the habitat. Rich said that the approach to dealing with this depends on personal philosophy and commitment. If there are no projects planned on those lands, then there is no money, and if there is no money, then Rich wondered how the COT would fund it. Rich said that one philosophy is to do the least amount of work possible that would demonstrate responsible stewardship (i.e., to have a "light finger on the pulse" of the species or the habitat). Rich said that the COT does not have to measure to the inch when management ability is to the mile. And, in some cases, the TAC doesn't know what CFPO or WYBC really need in Avra Valley. Therefore, to measure the habitat every five years, and annually protect it from fire could be a minimum TAC prescription that demonstrates responsibility for the habitats. Rich also recommended matching what Dennis Abbate has determined as the state of the art in terms of CFPO habitat description. Trevor said that another toolbox is the habitat-based monitoring that Brian Powell at Pima County is developing.

Ries said that one of the monitoring techniques that he thinks may be important would involve counting rooftops on aerial photos over time. Trevor agreed. Trevor added that it would be ideal to measure sediment transport and re-aggradation of degraded watercourses, but understands that this is probably above and beyond what is necessary. For the next TAC meeting, Guy said that it would be good to have Pima County's baseline information to know what they plan to do on a species-specific basis. Trevor said that the species-specific monitoring elements were very strong and he wondered if Brian Powell has a draft of the habitat and threats-based monitoring

protocols. *[Action Item: OCSD staff members talk with Brian Powell regarding the status of Pima County's MSCP monitoring program protocols.]*

Trevor said that project clearance surveys will need to be considered. There was a question about the need for clearance surveys and Trevor said that the COT needs to at least make sure that, for example, there are not any CFPO within 200 meters of heavy machinery in operation. This may be a question for Dennis in terms of the thresholds for an overwintering or migrating CFPO that could cause take in terms of harassment. Rich asked Marit if these would be a requirement and she said that she would need to ask. Jamie said that avoiding direct mortality is considered a biological objective for some of the Covered Species and that clearance surveys have been mentioned in the preliminary draft HCP.

### **3. Review 4/29/09 TAC meeting minutes**

TAC members approved the meeting minutes with revisions from Rich and Trevor.

### **4. Updates**

#### Buffelgrass eradication and seedbank study

In response to the completion of Travis Bean and Christine Hannum's seedbank study report for lands in Avra Valley, Trevor asked Leslie and Jamie a question via e-mail. It stated: "In regards to this study can you all put together a brief explanation of why the treatments didn't happen that this study was based on and a rationale of why did we spend the money for this."

Jamie said that Travis completed his previous report at the end of May 2008 and then reported to the TAC at the June 2008 meeting. There, he requested a continuation of the study and said that he needed to collect soil samples before the beginning of the monsoon season, which was just a couple of weeks later. The TAC agreed and so Jamie gave him the okay to proceed since Travis needed to act quickly.

Last week, Jamie spoke with Harold Maxwell, the COT employee who manages the Avra Valley lands and coordinates the buffelgrass spraying effort. Harold told Jamie that buffelgrass was not sprayed in 2008 as planned because getting the contract for aerial spraying took longer than expected. He attributed the delay to the COT budget situation in which many staff positions were, and remain, unfilled, making it impossible to get the contract in place on time. Also, a member of Harold's field crew passed away unexpectedly last summer. Harold told Jamie that a contract is now in place for aerial spraying, but whether or not he will have the funds to spray this year is still a question. Jamie said that, with future contracts that depend on the actions of staff within multiple COT Departments, he will do a better job of designing the contracts based on contingencies.

Rich said that the study provides no results in terms of cause and effect, but provides a lot of quantitative information / results in terms of on-the-ground seed status and activity. Jamie said that Travis only recommends continuing such a study if the COT has the ability to ensure that



there will be consistent management effort over multiple years. Jamie said that, given the uncertain and strained COT budget, it is unlikely that a multi-year commitment can be made at this time.

Trevor said that buffelgrass eradication and restoration strategies are a much bigger issue than the Tucson Water lands. Therefore, other parties should be interested in this study, including Pima County and land management agencies. Trevor said that if the COT could get back on track with herbicide spraying without the COT picking up all of the costs, that will provide important information County-wide. Marit said that there may be some Recovery Act funds available through the USFWS Partners Program for buffelgrass work. Marit will share contact information with Jamie. *[Action Item: Marit will provide USFWS Partners Program contact information with Jamie].*

## 5. Upcoming meetings

### Structure for future TAC meetings.

Jamie mentioned that Paul Green of the Tucson Audubon Society expressed interest in Tucson Audubon Society refilling their position on the TAC. Jamie mentioned that Tucson Audubon Society was originally part of the TAC because of their experience in habitat restoration and their emphasis on creating urban habitat for local and migratory birds. Ries moved that the TAC reinstate the Tucson Audubon Society position on the TAC. Linwood seconded. All were in favor and none were opposed. The motion carried.

Jamie reported that transcription and editing of the TAC meeting minutes consumes many hours and leaves less time to work on other HCP elements such as updating the HCPs, GIS and mapping, developing a monitoring program, and many others. Jamie asked if the TAC would be agreeable to abbreviating the minutes with a focus on main ideas, decision points, and tasks that are agreed upon during the meetings. Linwood agreed.

Rich wondered about the primary audience for the TAC meeting minutes. If this is the general public they may not appreciate having an abbreviated version. Trevor suggested making the voice recording available for anyone who asks for it. He said that using handwritten notes and repeating back the main ideas to the TAC for confirmation during the meeting would be fine. Ries said that he agreed with Linwood and is fine with anything. Marit said that she thinks the transcript style may be more valuable for TAC members, but said that she understands that, in their current form, the meeting minutes must take a long time to complete. Marit said that the summary style may encourage more consistent review by TAC members since they would not need to read 15-plus pages.

David said that he thinks that the TAC is trying to preserve collective memory with the minutes. He used the example of having 500 pictures for something and being asked to choose the top 50 and the other 450 are then discarded. What he has done in other situations is distill the conversation to main ideas but also reference some of the other discussion in a sentence or two. Then, the TAC can later decide if more detail on that particular discussion needs to stay in the collective memory and added to the minutes. He said if one attempts to boil down discussion at

the meeting, a lot of information will be lost that, in retrospect a month later, is deemed to be important.

## **6. Call to the Audience**

Regarding the details of TAC minutes, Matt said that, from an interested public perspective, it is a great service to have the meticulous notes and perhaps it has internal benefits. He added that, from someone who is interested, only on a couple of occasions has he read through the entire meeting minutes. However he said that there may be other entities that might find it valuable to refer back to those details. Matt suggested finding someone in the COT who can transcribe the recording. Linwood said he wondered the same thing. Trevor wondered how important context and the conservation knowledge that Jamie brings are to making the notes intelligible. Jamie mentioned that recognizing voices allows him to attribute comments. Trevor said that attribution is probably not as important to him as the comment itself.

Matt said that he has a sense of Jamie's workload and understands that there are aggressive timelines. So, to him it doesn't make a whole lot of sense for Jamie to spend valuable time transcribing meeting notes. Karolyn said that as a member of the taxpaying public, she agrees. If it is possible to summarize the complexity of the discussion, that may take more work than simply transcribing. Jamie said that he would like the help of the TAC to capture the complexity for the minutes during the meeting. Rich said that he thinks we should try this new approach. Trevor said that if there is something really important that was discussed and several months down the road, the TAC can ask Jamie to listen to the recording and capture that discussion.

Karolyn said that she wanted to talk a little bit about Pima Pineapple Cactus. She said that, with this particular species, the TAC is working in almost total ignorance. So, whatever decisions that the TAC makes will be ignorant decisions just because there is so little knowledge about the species. She said before the TAC gives up on a population that may have genetic characters that are important but unstudied, that the TAC really consider this.

Karolyn said that she wondered about the success of mitigation banks with the species. She said that it is her understanding that there is very poor success with mitigation banks. It is easy to say "We'll do mitigation banks" but if mitigation banks aren't working, then you are killing the species. She said that the work on propagation needs a lot more serious controlled work because, if you're not getting seeds, that's a "dead man walking." Also, Karolyn said that what the TAC recommends for the species is not in a vacuum with the public and that there would be a lot of public concern about basically writing off a portion of the very limited range of this species.

Trevor said that TAC members "feels her pain" and that they don't want to give up on the population. Karolyn said that she has seen some vague maps of locations and knows how difficult a species this is with the development pressure anticipated for the Southlands. But, she said that the fact is, the TAC doesn't know if there is connectivity. Trevor said that he thinks that there are some questions involving PPC connectivity and genetics that the TAC needs to get a handle on. With genetics, answers to questions are probably a long way out but the TAC needs to keep these issues in mind.

Marit asked Karolyn what she had heard specifically about mitigation banks. Karolyn said that she heard from an environmental consultant that there is a lot of mortality and they haven't been very successful. Karolyn asked if Marit had other information. Marit said that she had not heard that. She said that there has not been a high amount of demand for continuing to set aside more acres within the bank. Karolyn said that she could inquire about this and send the TAC some information. Matt asked Karolyn about the mortality she mentioned and if it was *in-situ* or transplants. Karolyn said she was talking about transplanting. Marit said that she didn't think that the TAC was considering transplanting as part of mitigation banks. Instead, the TAC is thinking about preserving habitat as mitigation. Trevor said that there is general agreement among TAC members that propagation and transplanting are not adequate conservation measures. Marit said that she agrees with Karolyn about the poor success of transplanting PPC. Marit said that the TAC is considering "conservation banks" if that is a different concept than "mitigation banks." Karolyn said that then the TAC needs to know a lot more about pollination corridors and she said that she knows this is a difficult issue for everyone. Trevor said that ever since Pima County published the first CLS map, it has given him discomfort because so much PPC habitat is unprotected in the Southlands.

Matt said that he had a comment with regard to Avra Valley HCP monitoring and the sorts of things that need to be measured, how they will be measured, and the costs. He said that he liked some of the ideas that the TAC mentioned involving fairly simple types of monitoring that could capture the key variables the TAC is interested in measuring. He said that this could involve carefully designed plots and wouldn't necessarily be cost prohibitive. He said that he thinks it would be useful to bring in folks from Pima County, for example, who have been thinking about this sort of thing a lot as well as a few more species experts. That way, the TAC can ask if they really think that measuring a particular variable will be cost effective over time in terms of being able to quantify changes.

Matt said that he is also unclear about patch size and level of connectivity and how one would quantify these. This is because it seems that if one uses different aerial photography, then one will have to survey a lot of areas to be able to map things properly. So, he wonders how that would be done and if using primary productivity as an indicator would be used. Since the TAC was interested in vegetation structure, he didn't know how this would be measured remotely.

Jamie said that, in terms of extent and connectivity, one idea is to use ocular estimation of aerial orthoimagery that is later ground-truthed. That is, by looking at the characteristics of the imagery, points could be established that are considered riparian and non-riparian. These would then be tested by someone on the ground using a GPS. Accuracy tests could be performed to provide a percentage of correct predictions.

Matt said that the Forest ERA [Ecosystem Restoration Analysis] project at Northern Arizona University has involved a lot of that work on Ponderosa Pine stand were mapped and field-checked. It's a different system, but some of the methodologies are really well thought-out and may be useful here.

## 7. Adjournment

The meeting was adjourned at 4:15 p.m.

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### Summary of Action Items:

- *OCSD staff members provide information on the COT's Erosion Hazard Setback requirements.*
- *OCSD staff members see if the COT has any ownership and maintenance guidelines for lands within Erosion Hazard Setbacks.*
- *COT staff members draft answers to the RPAC's questions and distribute to the TAC for review and edits.*
- *OCSD staff members talk with Brian Powell regarding the status of Pima County's MSCP monitoring program protocols.*
- *Marit will provide USFWS Partners Program contact information with Jamie.*